



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,705	01/30/2001	Kiichi Ueyanagi	108459	9488

7590 10/22/2003
OLIFF & BERRIDGE
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

CHU, KIM KWOK

ART UNIT	PAPER NUMBER
----------	--------------

2653

DATE MAILED: 10/22/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/771,705

Applicant(s)

UEYANAGI, KIICHI

Examiner

Kim-Kwok CHU

Art Unit

2653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 9/2/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimano et al. (U.S. Patent 5,774,444) in view of Fujii (U.S. Patent 5,818,811) and Koyama et al. (U.S. Patent 6,141,302).

Shimano teaches an optical reproduction apparatus for reproducing information from an optical recording medium very similar to the instant invention. For example, Shimano teaches the following:

(a) as in claim 1, a recording layer 22 in the optical recording medium (Fig. 15a);

(b) as in claim 1, an irradiation optical system 2-5 for condensing a laser light and irradiating the recording layer with the light (Fig. 5);

(c) as in claim 1, the laser light having a light intensity distribution the center portion of which is lower than that of

its peripheral portion (Fig. 5; column 6, lines 19-24; super-resolution effect is a result of a light intensity distribution where the center portion of the light intensity is lower than that of its peripheral portion);

(d) as in claim 1, a reproduction optical system 7-9 reproduces the information from the reflected light (Fig. 5);

(e) as in claim 1, reproducing the information from the center portion of the reflected light (Fig. 2; photodetecting 8 detects a central portion of the reflected light beam; column 22, lines 8-16);

(f) as in claim 2, the irradiation optical system 2-5 includes an optical element 15 provided in a light path of the irradiation optical system and forming the light intensity distribution (Fig. 5; column 6, lines 19-24);

(g) as in claim 3, a laser light source 1 for emitting the laser light (Fig. 5) ;

(h) as in claim 3, an optical filter 151 provided in a light path between the laser light source 1 and the optical recording medium 22, transparency of a center portion of the optical filter being lower than that of its peripheral portion (Fig. 5; column 6, lines 21-23; transparency of a center portion of the filter is lower because it changes the phase of light passing through it);

(i) as in claim 4, a laser light source 1 for emitting the laser light; and an optical filter 151 provided at an output surface of the laser light source, transparency of a center portion of the optical filter being lower than that of its peripheral portion (Fig. 5; column 6, lines 21-23; transparency of a center portion of the filter is lower because it changes the phase of light passing through it);

(j) as in claim 7, the reproduction optical system 7-9 includes a reflecting optical element 3 including a reflecting member 1101 which has an outer shape smaller than the reflected light, reflects the center portion of the reflected light toward a direction different from an incident direction of the reflected light and allows the peripheral portion of the reflected light to pass through (Figs. 3 and 5; column 5, lines 63-65);

(k) as in claim 8, the irradiation optical system 2-5 and the reproduction optical system 7-9 include a common optical element 3 which is provided in an common optical path of the irradiation optical system and the reproduction optical system, form the light intensity distribution of the irradiation laser light, and reflect the center portion of the reflected light toward a direction different from an incident direction (Fig. 5);

(l) as in claim 9, an optical element 3 provided in an optical path of the irradiation optical system 2-5 and forming the light intensity distribution (Fig. 5);

(m) as in claim 9, a simple reflecting film 1101 at a center portion of a section of a common optical path of the irradiation optical system and the reproduction optical system (Fig. 3);

(n) as in claim 9, a polarization beam splitter 3 at a peripheral portion of the center portion of the section, the polarized beam splitter 3 reflecting or transmitting according to polarization of the reflected light (Figs 3 and 5);

(o) as in claim 10, the reproduction optical system includes an error signal generation unit 91-93 which generates an automatic focusing error signal or a tracking error signal from the center portion of the reflected light (Fig. 6; column 6, lines 47-59);

(p) as in claim 11, the reproduction optical system includes an error signal generation unit 91-93 which generates an automatic focusing error signal or a tracking error signal from the peripheral portion of the reflected light (Figs. 2 and 6; column 6, lines 47-59); and

(q) as in claim 12, the reproduction optical system 7-9 separates a peripheral portion of a reflected light reflected from the recording layer (Fig. 2).

However, Shimano does not teach the following:

(a) as in claim 1, a super-resolution film is deposited on a recording layer 22;

(b) as in claim 12, the super-resolution film is an aperture type super-resolution film;

(c) as in claim 1, the reproduction optical system shades a peripheral portion of a reflected light; and

(d) as in claim 6, the reproduction optical system includes an optical filter provided in a light path of the reproduction optical system, transparency of a center portion of the optical filter being higher than that of its peripheral portion thereof.

With respect to the claimed features of claims 1 and 12, Fujii teaches an optical recording medium having an aperture type super-resolution film 241 deposited on a recording layer 242 (Fig. 1A; column 2, lines 36-46).

With respect to the claimed features of claims 1 and 6, Koyama teaches a mask/filter device 12 for masking the peripheral region of the reflected light beam (Fig. 5; column 13, lines 50-54).

A light beam with its central portion shielded can be use as a super-resolution light beam for recording data in a recording medium, however, when reproducing the high density data stored in the recording medium, a super-resolution layer is needed where it has an aperture/opening for allowing only one data to be accessed by the light beam. Hence, for a super-resolution read/write operation, it would have been obvious to one of ordinary skill in the art at the time of invention to use a super-resolution layer

such as Fujii's reproducing layer 241 in Shimano's recording layer as an aperture layer, because the aperture layer only allow data to be transferred/accessed in the aperture which is very small compared to the light spot and therefore super-resolution is realized.

On the other hand, to filter out the interference light beams reflected from the recording medium, it would have been obvious to one of ordinary skill in the art to use a masking means such as Koyama's in Shimano's reproduction optical system 7-9 to block the peripheral portion of the reflected light beam, because the cross-talk components in the peripheral portion of the light beam are blocked out by the low transparency of the peripheral region of the masking means.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimano et al. (U.S. Patent 5,774,444) in view of Fujii (U.S. Patent 5,818,811) and Kewitsch et al. (U.S. Patent 6,274,288).

Shimano in view of Fujii and Koyama teach an optical reproduction apparatus for reproducing information from an optical recording medium very similar to the instant invention. However, Shimano and Fujii in view of Koyama do not teach the following:

(a) as in claim 5, the irradiation optical system includes a semiconductor laser for emitting a laser light having the light intensity distribution due to a TEM mode.

Kewitsch teaches a donut shape light beam generated by a TEM mode laser source (Fig. 17b; column 18, lines 9-12).

A super-resolution light has a donut shape light distribution. To achieve this, a super-resolution light beam can be generated by blocking the light in the center such as Shimano's or by a TEM mode laser source such as Kewitsch's. Hence, it would have been obvious to one of ordinary skill in the art at the time of invention use a light source with TEM mode light distribution in Shimano's optical reproduction apparatus, because the TEM mode light beam generates a donut shape light distribution.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimano et al. (U.S. Patent 5,774,444) in view of Fujii (U.S. Patent 5,818,811) and Koyama (U.S. Patent 6,141,302) and further in view of Tsai (U.S. Patent 6,285,652).

Shimano in view of Fujii and Koyama teach an optical reproduction apparatus for reproducing information from an optical recording medium very similar to the instant invention. However, Shimano in view of Fujii and Koyama do not teach the following:

(a) as in claim 13, the super-resolution film is a scattering type.

Tsai teaches a scattering type super-resolution film (Figs. 3 and 4, column 3, lines 35-37).

Instead of an aperture type of super-resolution film, a near-field type diffraction layer can also generate super-resolution. Hence, for a super-resolution read/write operation, it would have been obvious to one of ordinary skill in the art at the time of invention to use a super-resolution layer such as Tsai's dielectrics film and metal film as illustrated in Fig. 4 in Shimano's recording layer as a scattering type super-resolution layer, because the scattering layer generates a total internal reflection for a near-field light beam which has a super-resolution effect but brighter than a super-resolution light beam which has its central portion being blocked.

5. Claims 14-16 have limitations similar to those treated in the above rejection, and are met by the references as discussed above. Claim 16 however also recites the following limitation which is also inherent in Shimano's teaching:

(a) as in claim 16, a modulation unit 235 for modulating the laser light passing through an optical path of the irradiation optical system in accordance with the information (Fig. 26).

6. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks Washington, D.C.
20231 Or faxed to:

(703) 872-9314 (for formal communications intended for
entry. Or:

(703) 746-6909, (for informal or draft communications,
please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park
II, 2021 Crystal Drive, Arlington. VA., Sixth Floor
(Receptionist).

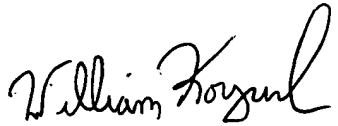
Any inquiry of a general nature or relating to the status of
this application should be directed to the Group receptionist
whose telephone number is (703) 305-4700.

Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Kim CHU
whose telephone number is (703) 305-3032 between 9:30 am to 6:00
pm, Monday to Friday.

K2 10/14/03

Kim-Kwok CHU
Examiner AU2653
October 14, 2003

(703) 305-3032


WILLIAM KORZUCH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600